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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/688,835	10/16/2003	James D. Sterling	530045.415C1	9435

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EXAMINER

NOGUEROLA, ALEXANDER STEPHAN

ART UNIT	PAPER NUMBER
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1753

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	04/19/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary

Application No.

10/688,835

Applicant(s)

STERLING ET AL.

Examiner

ALEX NOGUEROLA

Art Unit

1753

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-30 is/are pending in the application.
- 4a) Of the above claim(s) 1-23 is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 24-30 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 16 January 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. ____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date 4/23/2004.
- ☒ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____.
- ☐ Notice of Informal Patent Application
- ☒ Other: IDS of 07/18/2006.

DETAILED ACTION

Election/Restrictions

1. Restriction to one of the following inventions is required under 35 U.S.C. 121:
 - I. Claims 1-12 and 19-23, drawn to a microfluidic system, classified in class 204, subclass 600.
 - II. Claims 13-23, drawn to a method of forming a microfluidic structure, classified in class 204, subclass 600.
 - III. Claims 24-30, drawn to a method of operating a microfluidic system, classified in class 204, subclass 450.

The inventions are distinct, each from the other because of the following reasons:

Inventions Group I and Group III are related as product and process of use. The inventions can be shown to be distinct if either or both of the following can be shown: (1) the process for using the product as claimed can be practiced with another materially different product or (2) the product as claimed can be used in a materially different process of using that product. See MPEP § 806.05(h). In the instant case the product can be used in a process that does not involve determining a position of a cursor on a display. Instead, the paths the fluid bodies are to take through the microfluidic system can be programmed into the microfluidic system before the fluid bodies are introduced into it. That is, the microfluidic system can be configured for automated control of the

microfluidic system. See, for example, the abstract, Figures 6 and 6A, and col. 02:50 – col. 02:10 in Batcheldor (US 4,390,403).

2. Because these inventions are independent or distinct for the reasons given above and there would be a serious burden on the examiner if restriction is not required because the inventions require a different field of search (see MPEP § 808.02), restriction for examination purposes as indicated is proper.

3. Since the invention of Group II, the method of forming a microfluidic structure is not patentably distinct from the invention of Group I it will be joined with it. MPEP 806.05(i).

4. During a telephone conversation with Frank Abramonte on April 12, 2007 a provisional election was made without traverse to prosecute the invention of Group III, claims 24-30. Affirmation of this election must be made by applicant in replying to this Office action. Claims 1-23 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

5. Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one

Art Unit: 1753

or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

8. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of

Art Unit: 1753

the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

9. Claims 24-30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Becker et al. (US 6,294,063 B1) ("Becker") and Seul et al. (US 7,156,315 B2) ("Seul"). Although not needed for Becker and Seul to qualify as prior art, it should be noted that no disclosure of "determining a position of a cursor on a display," as required by independent claim 24, appears in the parent application 10/305,429, of which the instant application is a continuation-in-part.

Addressing claim 24, Becker discloses a method of operating a microfluidic system (the abstract and col. 03:14-16), comprising

receiving a first user selection (col. 15:53-56 – implied since a user interface is provide for simple programming of the signal generator);

identifying a position of a fluid body in response to the first user selection (col. 16:33-43); and

producing at least one instruction for driving at least one of a number of drive electrodes and a number of ground electrodes based on the identification

(see Figure 1; col. 19:45-54; and col. 20:29-45. Note that "drive electrodes" as used by Becker implicitly includes ground electrodes as Becker discloses applying voltage signals to electrode pairs to create a force that will move the fluid bodies. See col. 20:52-65).

Becker does not mention (a) determining a position of a cursor on a display, (b) identifying at least one of a position and a number of fluid bodies based on the position of the cursor in response to receiving the first user selection, and (c) producing at least one instruction for driving at least one of a number of drive electrodes and a number of ground electrodes based on the identification, although Becker does disclose identifying the position of a fluid body and generating an electrical manipulation force to move it as desired (col. 20:46-65). In essence, the difference between the invention of Becker and that claimed is that in Becker the user of the microfluidic system may program into the controller the path a fluid body is to take, or at least the starting point and end point of a path, while in the claimed invention the user may use a cursor to set the path of a fluid body.

Seul discloses a method for manipulating colloidal particulates using electrodes comprising using a mouse, that is, a cursor, to "drag and drop" particulates or create and store a trajectory for some of the particulates. See col. 07:54-64; col. 08:51-52; col. 36:50-63; and col. 38:18-33.

It would have been obvious to one with ordinary skill in the art at the time of the invention to modify the method of Becker to allow the path of a fluid body to be set with a cursor as taught by Seul because this will make the microfluidic system much easier

to use. Also, cursor control of the fluid body will allow the user to make spontaneous changes in the path of the fluid body to quickly adjust for a change in conditions or to experiment.

Addressing claims 25-28 and 30, the additional limitations of these claims, as to when an instruction will be executed or acting on a second user selection, will just depend on the desired microfluidic processing task or interaction to be achieved and how many fluid bodies are to be moved about.

Addressing claim 29, note again that Becker discloses specifying just the starting point and end point of the path or completely specifying the path. See col. 20:39-45. So specifying just the starting point, end point of the path, and an intermediate point on the path is an obvious variant this disclosure.

10. Claims 24-30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shenderov (US 6,565,727 B1) ("Shenderov"), Becker et al. (US 6,294,063 B1) ("Becker"), and Seul et al. (US 7,156,315 B2) ("Seul").

Addressing claim 24, Shenderov discloses a method for moving fluid bodies using a microfluidic system comprising a number of drive electrodes (32a) and ground electrodes (32b). See Figures 1 and 5-8.

Shenderov does not mention how the paths of the fluid bodies are controlled, although Shenderov does disclose monitoring the fluid bodies by optical or radioactive detection. See col. 05:38-40.

Seul discloses a method for manipulating colloidal particulates using electrodes comprising using a mouse, that is, a cursor, to "drag and drop" particulates or create and store a trajectory for some of the particulates. See col. 07:54-64; col. 08:51-52; col. 36:50-63; and col. 38:18-33.

It would have been obvious to one with ordinary skill in the art at the time of the invention to modify the method of Shenderov to allow the path of a fluid body to be set with a cursor as taught by Seul because this will make the microfluidic system much easier to use. Also, cursor control of the fluid body will allow the user to make spontaneous changes in the path of the fluid body to quickly adjust for a change in conditions or to experiment.

Addressing claims 25-28 and 30, the additional limitations of these claims as to when an instruction will be executed or acting on a second user selection, will just depend on the desired microfluidic processing task or interaction to be achieved and

Art Unit: 1753

how many fluid bodies are to be moved about. In fact, Seul discloses dropping and dragging particles interactively or programming and executing a manipulation of particles in a scheduled manner. See col. 07:54-67.

Addressing claim 29, since Seul discloses specifying dropping and dragging the particles as desired or programming the paths. See col. 07:54-67. So specifying just the starting point, end point of the path, and an intermediate point on the path is an obvious variant this disclosure.

Claim Objections

11. Claims 26-28 objected to because of the following informalities: "last" should be -- least -- . Appropriate correction is required.

Priority

12. If applicant desires to claim the benefit of a prior-filed application under 35 U.S.C. 120, a specific reference to the prior-filed application in compliance with 37 CFR 1.78(a) must be included in the first sentence(s) of the specification following the title or in an application data sheet. For benefit claims under 35 U.S.C. 120, 121 or 365(c), the

reference must include the relationship (i.e., continuation, divisional, or continuation-in-part) of the applications.

If the instant application is a utility or plant application filed under 35 U.S.C. 111(a) on or after November 29, 2000, the specific reference must be submitted during the pendency of the application and within the later of four months from the actual filing date of the application or sixteen months from the filing date of the prior application. If the application is a utility or plant application which entered the national stage from an international application filed on or after November 29, 2000, after compliance with 35 U.S.C. 371, the specific reference must be submitted during the pendency of the application and within the later of four months from the date on which the national stage commenced under 35 U.S.C. 371(b) or (f) or sixteen months from the filing date of the prior application. See 37 CFR 1.78(a)(2)(ii) and (a)(5)(ii). This time period is not extendable and a failure to submit the reference required by 35 U.S.C. 119(e) and/or 120, where applicable, within this time period is considered a waiver of any benefit of such prior application(s) under 35 U.S.C. 119(e), 120, 121 and 365(c). A benefit claim filed after the required time period may be accepted if it is accompanied by a grantable petition to accept an unintentionally delayed benefit claim under 35 U.S.C. 119(e), 120, 121 and 365(c). The petition must be accompanied by (1) the reference required by 35 U.S.C. 120 or 119(e) and 37 CFR 1.78(a)(2) or (a)(5) to the prior application (unless previously submitted), (2) a surcharge under 37 CFR 1.17(t), and (3) a statement that the entire delay between the date the claim was due under 37 CFR 1.78(a)(2) or (a)(5) and the date the claim was filed was unintentional. The Director may require additional

information where there is a question whether the delay was unintentional. The petition should be addressed to: Mail Stop Petition, Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450.

If the reference to the prior application was previously submitted within the time period set forth in 37 CFR 1.78(a), but not in the first sentence(s) of the specification or an application data sheet (ADS) as required by 37 CFR 1.78(a) (e.g., if the reference was submitted in an oath or declaration or the application transmittal letter), and the information concerning the benefit claim was recognized by the Office as shown by its inclusion on the first filing receipt, the petition under 37 CFR 1.78(a) and the surcharge under 37 CFR 1.17(t) are not required. Applicant is still required to submit the reference in compliance with 37 CFR 1.78(a) by filing an amendment to the first sentence(s) of the specification or an ADS. See MPEP § 201.11.

Information Disclosure Statement ("IDS")

13. Applicants are requested to provide a copy of item CP (the Yeh article) , which is cited on the IDS of April 23, 2004, but is missing from the file for the instant application and the parent application.

Art Unit: 1753

14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to ALEX NOGUEROLA whose telephone number is (571) 272-1343. The examiner can normally be reached on M-F 8:30 - 5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, NAM NGUYEN can be reached on (571) 272-1342. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


Alex Nogueroles

Primary Examiner

AU 1753

April 15, 2007